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NOTES AND LITERATURE

GENERAL BIOLOGY

The Spirit of Nature Study.[1]— Nature may be approached in a very unscientific spirit. Thus Emerson was led to dedicate to the *Botanist* the following quatrain:

> Go thou to thy learned task,
> I stay with the flowers of Spring:
> Do thou of the Ages ask
> What me the Hours will bring.

What the hours brought he so expressed that the Rhodora has become a universal type of botanic beauty. In a different spirit the New England botanists named their journal *Rhodora,* for they profess to have been uninfluenced by Emerson's familiar lines; they sought a characteristic local plant with a short name which would commend itself to bibliographers. The spirit of nature study, according to Dr. Bigelow's interpretation, combines the sentimental and the scientific, with its emphasis upon the former. This appears in such advice as,— "Take frequent rambles into the country; associate with natural objects, love them, take them into your nature, and treasure the remembrances of them.... Subsequent years of trouble cannot obliterate the charmed impressions." "At the next stopping place there will be no fairer landscapes, nor more beautiful skies, no statelier trees, more joyous songsters, nor brighter flowers; more cheerful hum of insects, more invigorating air, no more happiness, no better friends, and no better God."

Therefore more time should be given to nature study in the schools, and many educators are quoted to this effect. School children should be taken to the country and should have plants and animals at home; rabbits and gourds are particularly recommended since the former are reasonably small and the latter grow upward 'where land is cheap.' College methods of instruction should not be extended to elementary schools. Of the sixteen half-tones which illustrate the book, twelve are photographs of boys and girls out in the country.

The nature student, as Burroughs has said, does not regard birds as ornithological specimens, nor wild flowers as material for herbaria. Dr. Bigelow's expeditions are not for 'what one can get.' It is apparent that within the present century the destruction of such irreplacable plants and animals as remain will not be tolerated, either for sport, for food, or for amateur collections. Since nature study in the schools should save the swallows' banks from the small boy and protect native plants from bouquet gatherers, it may prove of great value to the community. This, however, is not strongly presented in Dr. Bigelow's book, which includes a photograph of eleven women gathering bunches of violets, and recounts, as one of the author's pleasurable reminiscences, the bloody death of a woodchuck.

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[1] Bigelow, Edward F., *The spirit of nature study.* New York, A. S. Barnes & Company, 1907. 12mo, 222 pp.

Dr. Bigelow's twenty-three informal essays are enlivened by many quotations and anecdotes; their author appreciates the "fun of being a naturalist" and his good natured humor is all at the expense of the "bug-hunter's" critics. He is at home with boys and girls for whom he edits each month an excellent department of Nature and Science in *St. Nicholas*, but the book here considered is addressed to parents and to teachers of nature study.

Heterogenesis.— The idea that eggs of one species may give rise to adults of other species still finds an occasional advocate undismayed by overwhelming evidence to the contrary. A contribution recently submitted to the *Naturalist* set forth breeding experiments in which several species of insects hatched from a single batch of eggs, and none were parasites. The suggestion of a distinguished entomologist that in these days of the multiplicity of species, several might readily arise from one lot of eggs, was here inapplicable, for different genera were involved. The probable explanation is that the technique of the experiments was faulty. Dr. H. Carlton Bastian continues to believe in heterogenesis, upon which he has published voluminously, but a skeptical critic of his latest book concludes with the following anecdote.[1] "On one occasion, Dr. John Rennie, lecturer on parasitology in the University of Aberdeen and an expert investigator, observed two infusorians moving inside a rotifer's egg, but he did not regard the phenomenon as a proof of heterogenesis. As a matter of fact the egg envelope showed a small split through which the infusorians soon passed out, doubtless following the path by which they formerly entered."

F. T. L.

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[1] Bastian, H. C. *The evolution of life.* Reviewed in *Nature*, May 2, 1907, vol. 76, p. 1.